TREES MAGAZINE

Globe Locusts Make Splendid Showing On Cleveland Street (Story On Page 10)

National Shade Tree Conference—Cincinnati—Aug. 27-31

Developments In Oak Wilt Research — *James E. Kuntz*

The Progress of Horticulture — *Richard R. Fenska*

July-August, 1951 — *The Journal of American Arboriculture* — Vol. 11 No. 5

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TREES Magazine is a bi-monthly Journal published at Cleveland, Ohio, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., P. O. Box 5607, Cleveland, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

ALONG THE WAY

With . . .
EDW. SCANLON

■ Although I AM FORBIDDEN to pass thru the GATES OF THE TOWN of FITCHBURG, MASS., I know now where IT IS—thanks to CHARLIE SWEENEY, CITY FORESTER. I was PEPPERED WITH PAMPHLETS on FITCHBURG.

■ *The Fitchburg "BAN ON SCAN" was brought about by MY ADMISSION, to BILL GULLAM, that I DID NOT KNOW where FITCHBURG was situated, in trying TO GET a kodachrome slide of the beautiful RED WEEPING BEECH located there. Anyway CHARLIE SWEENEY is GETTING ME THE KODACHROME, and you CAN BE SURE, the NEXT TIME I go to VERMONT I'll visit FITCHBURG, ban or NO BAN.*

■ A VERY WELCOME VISITOR a short time was HENRI DEN OUDEN, Old Farm Nursery, BOSKOOP, HOLLAND. HANK is on his ANNUAL TRIP to the U. S. and will CONCLUDE IT by attending the AMERICAN NURSERYMENS CONVENTION in NEW ORLEANS July 15-20. He's TAKING HOME a very SPIFFY NEW CHEVY.

■ *Well CHARLEY IRISH and I sure had OUR PLANS for the WESTERN CONFERENCE at PORTLAND kicked in the pants. First CHARLEY was GROUNDED by his DOC when HIS TICKER backfired (all O.K. now) then I WAS GROUNDED by the AIR LINE STRIKE. So we MISSED—sorry guys, WE WERE REALLY PLANNING on it big. NEXT YEAR—maybe.*

■ Here's AN APPEAL for help—RAY KEEN, UNIV. OF KANSAS, MANHATTAN, needs the 7th, 8th and 20th copies of the N. S. T. C. PROCEEDINGS to complete his series. WE KNOW there must be a LOT OF LOOSE ONES FLOATING AROUND. Dig 'em up BRETHREN and make SOME ONE VEDDY HOPPY.

■ *HAVE ALWAYS been SORTOFA, KINDOFA ROSE FANCIER, but DON'T KNOW much ABOUT THEM. However, THIS YEAR thru the GOOD GRACES of my old friend JOHN ARMSTRONG (ARMSTRONG NURSERIES, ONTARIO, CALIF), the grower of PEERLESS ROSES. I obtained a PREVIEW of TWO NEW VARIETIES — CHIEF SEATTLE and HELEN TRAUBEL. The TRAUBEL is ALL-AMERICAN WINNER for 1951 but HOW THEY MISSED CHIEF SEATTLE I'll never know. IT OPENS a LIGHT CORAL PINK and fades to an APRICOT YELLOW. You HAVE TO SEE IT.*

■ READING, PA., has joined the "HIT PARADE"—it's been hit by DUTCH ELM DISEASE. FOUR cases found there by RALPH R. MOYER of the ARGOS TREE SURGEONS (Oh, that word!). That's NOT GOOD RALPH but there IS A CHANCE with a GOOD PROGRAM.

■ BILL (Wm. C.) HALL of CENTRAL VALLEY, N. Y. has opened HIS OWN Arboricultural business. BILL had been LOCAL MANAGER for the BARTLETT TREE EXPERT CO. since 1936, when he opened their office in CENTRAL VALLEY. He is a member of the AMERICAN ASSOCIATION FOR ADVANCEMENT OF SCIENCE, the NEW YORK STATE ARBORISTS ASS'N and other scientific organizations. BEST OF LUCK, BILL.

Mr. Walter L. Flory

■ *CLEVELAND'S trees LOST A DEVOTED FRIEND in the death, July 3rd, of Walter L. Flory, civic leader and conservationist. MR. FLORY was an ARDENT PROPONENT of GOOD STREET TREE MANAGEMENT. One of his LAST ACTIVITIES was a RESOLUTE EFFORT that RESULTED in the passage, by the OHIO LEGISLATURE, of the NATIONAL ARBOR DAY BILL (See TREES MAGAZINE Vol. II, No. 4, pg. 9). As a PERSONAL FRIEND and a FRIEND OF TREES his passing leaves a VERY EMPTY PLACE.*

■ HAROLD NEWINS, Director of the SCHOOL OF FORESTRY, UNIV. OF FLORIDA, has announced his RETIREMENT. HAROLD has long been a GOOD FRIEND OF SHADE TREES in addition to his PROFESSIONAL INTERESTS. He was the GUIDING LIGHT in the formation of the SOUTHERN SHADE TREE CONFERENCE and has been a very WELCOME ATTENDANT at many NATIONAL CONFERENCES. We hope WE WILL SEE YOU more often NOW HAROLD that you have NOTHING TO DO.

■ *I THEENK a SLIGHT ERROR was made (HORRORS) in an early issue THIS YEAR when we announced that NEW JERSEY'S NEW OFFICIAL TREE was the Dogwood. Actually, according to HARRY BANKER, the STATE TREE is the Red Oak (QUERCUS BOREALIS MAXIMA) while the Dogwood (CORNUS FLORIDA) is the official WAR MEMORIAL TREE. Right, HARRY?*

■ *Note to MICHIGAN STATE COLLEGE —your recent brochure "TRAINING IN PARK MANAGEMENT AND MUNICIPAL FORESTRY." We think the word "FORESTRY" is definitely a misnomer— "CITY FORESTER", "FORESTRY DEPARTMENT"—absolutely misleading. There is NO ORNAMENTAL aspect to Forestry; it is an AGRICULTURAL SCIENCE. How about "PARK ADMINISTRATION AND MUNICIPAL SHADE TREE MANAGEMENT."*

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Box 5607, Cleveland 1, Ohio

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■ ANOTHER MEETING of note to be held in ZALESKI STATE PARK will be the 31st NATIONAL CONFERENCE ON STATE PARKS, Oct 8-12. Local chairman is V. W. FLICKINGER, Chief, DIV. OF PARKS, State Office Bldg. COLUMBUS 15, OHIO.

■ *With all the GOOD TREE VARIATIONS that are SO BADLY NEEDED, for streets and specialized planting jobs, STANDING AROUND the country WAITING TO BE "DISCOVERED," it is a SHAME more interest is NOT SHOWN in this MOST FASCINATING side of being in horticultural work. The SELECTION COMMITTEE of the NATIONAL SHADE TREE CONFERENCE has had a DISCOURAGING small amount of COOPERATION this year. T'was EVER THUS, I 'spose.*

■ BADLY NEEDED in EVERY STREET TREE program in THE COUNTRY is a group of TWO OR THREE GLOBE-HEAD TREES that will NOT EXCEED 18 OR 20 FEET in height at MATURITY. Such a form with LOW WIRES, NARROW TREE-LAWN and SHALLOW SETBACK is positively INDISPENSABLE if the job is TO BE DONE CORRECTLY on the many, many streets in every city where such CLOSE QUARTERS PREVAIL—and BOY do the PEOPLE LIKE the nice orderly APPEARANCE IMPARTED.

■ *The OHIO NURSERYMENS ASS'N will hold a summer meeting in ZALESKI STATE PARK, Aug. 21-23. FRANK TURNER of the BERRYHILL NURSERY CO., Springfield, Ohio, is the ORGANIZATION'S SECRETARY.*

■ Met a lot of OLD PLAYMATES, and MADE SOME NEW ONES at NEW ORLEANS at the AMERICAN NURSERYMENS ASSOCIATION convention LAST MONTH. My FIRST MEETING but DEFINITELY NOT the LAST.

Observe **NATIONAL ARBOR DAY** Last Friday in April

July - August, 1951 **Journal of the National Arborist Association** Vol. 11—No.5

EDWARD H. SCANLON, Editor
Box 5607, Cleveland 1, Ohio
ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

STREET TREE NEGLECT IS BAD, ECONOMICALLY AND CULTURALLY

As one visits city after city across this land of ours and sees the ever-increasing signs of street tree neglect you suddenly come to with a shuddering start and begin to wonder what has happened to the budding American culture that fifty years ago inaugurated a wide program of street embellishment.

While this broad program of extensive, and intensive street tree planting, the remnants of it, has become obsolete in the present day encroachments of steel, concrete and wires, at least the realization of the benefactions of trees to city dwellers was recognized and acted upon. True it is those old plantings have now become a burden because of the paved streets and sidewalks; the multitudinous overhead wires; the jamming of houses on valuable property, and the mad obsession of "business men" that trees are not compatible with places of business. This latter concept is definitely and obviously ridiculous—especially so when one sees some of the really fine business and shopping centers in various cities very graciously enhanced by the charm of well placed and maintained trees. An outstanding example is Shaker Square in Cleveland. Without its beautiful elms this beauty spot would be just "any old place." There are similar spots in many cities. They are admired by all who see them and appreciated by all who patronize the shops, still they are few and far between.

The same is true of our approach to the new problems that have arisen in the street tree field. There are very few examples thruout the country of functional street plantings that present day site situations dictate. There is a definite trend on the part of many of the younger men to view the needs of the day in its true perspective but unfortunately they are still too few. Whether you like it or not the day of the old forest and park giants is gone. Not all of the trees are gone unfortunately, but no longer can their many bad features be tolerated by the thinking, conscientous city arborist or park superintendent. The turn to the needs of the present is being made, but too many are too slow in making the turn.

If the powerful garden club groups of the country would get out of the rut they are in and put their latent influence back of an aggressive effort to beautify their cities by an active campaign of functional street tree management, they would finally begin to justify their existence. Other groups that have big stakes in good appearance in their cities are the service clubs such as Rotary, Kiwanis, Optimist, Lions, and others. Their members are all active business men, but they are missing a first class opportunity to do their cities a real service when they fail to see the tangible values to be derived from good housekeeping in the form of uniformly selected and maintained street trees. Very seldom either does the Chamber of Commerce, of any city, ever give any thought or

PLANT AMERICA

help to this means of increasing and maintaining property values.

All of which means that the City Arborist is left to fight a very important fight alone. He must battle the heads of departments rendering "political" services to the public and if he should suddenly scream out for more money some benign jackass will smile and joshingly quote from Joyce Kilmer—at least he knows the first line. It's a tough row to hoe alone and American cities are beginning to show the lack of influence necessary to keep them from looking like something the cat dragged in. In some cities intelligent people have awakened to the fact that Dutch elm disease very easily could make a Sahara out of the place and are doing things. But, if it's not Dutch elm disease, it could be old age, out-of-scale or inferior species that are causes for the need of a scientific street tree management program in every city, town, and hamlet in the land.

Progressive people need to be awakened and the newspapers of the land, if they can stop being the vehicles for starting a lot of phony buying sprees for a few minutes, can render a real service to the communities they are supposed to serve, by soundly campaigning for a scientific street tree program. Streets with properly selected and cared for trees are good business for any city; they are a mark of distinction and have reflected the degree of culture of many peoples in many lands since the dawn of civilization. Without tree embellished streets a city is nothing.

Mechanics Lien Law Passed In Ohio

To amend Section 8310 of the General Code *by granting mechanic's lien rights to nurserymen.*

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. That section 8310 of the General Code be amended to read as follows:

SEC. 8310—Every person *or corporation* who does work or labor *upon* or furnishes machinery, material, or fuel, for constructing, altering, or repairing a boat, vessel or other water craft, or for the erecting, altering repairing, or removing a house, mill, manufactory, or any furnace or furnace material therein, or other building, appurtenance, fixture, bridge or other structure, or for digging, drilling, boring, operating, completing, or repairing of any gas well, oil well, or other well, or for altering, repairing or constructing any oil derrick, oil tank, or gas pipe line, or furnishes tile for *the* drainage of any lot or land, *or person or corporation who does work or labor or furnishes material for the improvement, enhancement, or embellishment of real property by seeding, sodding, or the planting thereon of any shrubs, roses, trees, plants, vines, small fruits flowers or nursery stocks of any kind or description, or by grading, or filling to establish a grade* by virtue of a contract, express or implied, with the owner, part owner, or lessee of any interest in real estate, *or the authorized agent of the owner, part owner or lessee, of any interest in real estate,* and every person who shall as a subcontractor, laborer, *or* material man, perform any labor, or furnish machinery, materials or fuel, to each original or principal contractor, or any subcontractor, in carrying forward performing, or completing any such contract, shall have a lien to secure the payment thereof upon such boat, vessel, or other water craft, or upon such house, mill, manufactory, furnace, or other building, or appurtenance, fixture, bridge, or other structure, or *nursery stocks,* or upon such gas well, oil well, or other well, or upon such oil derrick, oil tank, oil or gas pipe line, and upon the machinery or material so furnished and, upon the interest, leasehold, or otherwise, of the owner, part owner, or lessee, in the lot or land upon which they may stand, or to which they may be removed, *or upon which such grading or filling has been done,* to the extent of the right, title and interest of the owner, part owner, or lessee, at the time the work was commenced or materials were begun to be furnished by the contractor, under the original contract, and also to the extent of any subsequent acquired interest of any such owner, part owner, or lessee.

SECTION 2. That existing section 8310 of the General Code be repealed.

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. . . and do it efficiently. DDT is the insect killer, so why not put it to work in effective, easy-to-use form . . . Pennsalt's DDT Emulsion Concentrate 34 . . . designed to help you speed control of the insect infestations ahead. Each gallon of DDT Emulsion Concentrate 34 contains three full pounds of DDT and ⅓ *less* solvent. *Two* gallons of it contain as much DDT as *three* gallons of 25% materials. With this new emulsion, two will indeed do the work of three, swiftly and effectively.

In addition, this versatile spray offers you increased safety and convenience. It's safer: Because it contains less solvent, danger of foliage burn is reduced. It's convenient—because mixes containing a known weight of DDT are simple to make up. Just use ⅓ of a gallon of Emulsion Concentrate 34 for each pound of DDT required in the final mixture. It's easy to prepare and can be used with mist concentrate and hydraulic equipment.

Trees For Iceland

Reykjavik, Iceland—Trees of Brazilian origin may decorate gardens and parks in the capital of treeless Iceland. Kaj A. Svanholm of Rio de Janeiro has offered the city 5,000 eucalyptus plants from Brazil. He visited Iceland last Summer and thinks they might grow well.

Ed's Note: Someone has partaken of the weed. No Euc. will stand zero.

Chow at "Diamond" Jim Morans in New Orleans

Basking in the gleam cast by the diamonds set in the teeth of "Diamond" Jim Moran, restaurateur of New Orleans Vieux Carre, while attending the 76th annual convention of the American Nurserymens Association are: L. to R.—John Siebenthaler, the Siebenthaler Co., Dayton, Ohio; Dr. L. C. Chadwick, Secretary of the National Shade Tree Conference; Ed Scanlon, Editor of TREES Magazine, and Cy Watson, Dayton insurance magnate.

National Shade Tree Conference—Cincinnati, August 27-31

Get Your Tickets For N. S. T. C. at Cincinnati

The annual trek of the nation's treemen will soon begin. This time to Cincinnati, Ohio, where the 27th National Shade Tree Conference will open when President Ed Higgins strides onto the platform at the Netherland Plaza Hotel August 27th. The meeting will continue thru the 31st.

A new feature of the conference will be the first National Tree Climbing Contest to crown the country's first tree skinning champ. Judges for the contest will be Dr. Ray R. Hirt, New York State College of Forestry; Mr. Norman Armstrong, arborist, White Plains, N. Y,. and Dr. Curtis May, United States Dept. of Agriculture, Beltsville, Md.

Contestants will be the winners of various sectional meetings of conference chapters and state shade tree organizations. Several contestants have already been decided. Winner of a contest conducted by the New Jersey Federation of Shade Tree Commission on June 27th, was Kenneth Gregory of the Rutherford Shade Tree Commission.

In Massachusetts on July 18th Joseph Arsenault, employed by the Fred Ralston & Co., of Allston won the contest staged by the Massachusetts Tree Wardens and Foresters Association at Danvers. Other contests to be held shortly will decide winners for the Ohio Chapter, N. S. T. C.; the Connecticut Tree Protective Association and the Midwest Chapter N. S. T. C. This will make a total of five contestants who will compete at Cincinnati and should be the beginning of one of the most interesting features of future meetings. The finals will be run on Tuesday afternoon, August 28th at Eden Park in conjunction with the field demonstrations.

Another highlight will be the trip to Mt. Airy Forest on Wednesday, August 29. Here you will have an opportunity to see many splendid new species of trees that are rapidly coming into the use they so richly deserve.

The meeting will close formally with the annual banquet Thursday evening. A splendid all-around program is scheduled and you will not want to miss this opportunity to acquaint yourself with new developments in your craft, as weil as an opportunity to visit the metropolis on the beautiful Ohio River.

TWENTY-SEVENTH NATIONAL SHADE TREE CONFERENCE CONVENTION, NETHERLAND PLAZA HOTEL, CINCINNATI, OHIO
August 27-31, 1951

Kenneth Gregory, employed by the Rutherford, N. J. Shade Tree Commission, was the winner of the Tree Climbing Contest held June 27th at New Brunswick by the N. J. Society of Certified Tree Experts. Kenneth will compete in the National finals at Cincinnati this month.

All sessions held in the Hall of Mirrors, 4th Floor, unless otherwise stated.
Time: Eastern Standard

MONDAY, AUGUST 27

A. M.
10:00—Meeting of National Arborists Association. Pavillon Caprice, 4th Floor.
Staging of Commercial Exhibits.

P. M.
1:30—Pre-opening Registration. 4th Floor Foyer
Meeting of National Arborist Association. Pavillon Caprice, 4th Floor.

EVENING
6:30—Meeting of Executive Committee. Parlor L, 4th Floor.
7:30—Meeting of the Public Utility Arborists. Parlors E. and F., 4th Floor.

TUESDAY, AUGUST 28

A. M.
8:00—Registration. 4th Floor Foyer.
10:00—Official Opening. 27th Convention-call to order by Pres. E. W. Higgins.
Invocation.
Address of Welcome—Max J. Palm, Jr., Board of Park Commissioners, Cincinnati, Ohio.
Appointment of Convention Committees.
10:30—Today's Economic Outlook—Leonard E. Read, Pres., The Foundation for Economic Education, Irvington-on-Hudson, N. Y.
11:15—The City of Tomorrow—Prof. M. E. Bottomley, Dept. Landscape Architecture, University of Cincinnati, Cincinnati, Ohio.

P. M.
1:00—Busses leave for Eden Park.
Commercial Demonstrations
Tree Climbing Contest.

EVENING
6:30—Busses leave for Coney Island
Dinner and Amusements—A good time for all.

WEDNESDAY, AUGUST 29

A. M.
9:00—Business Session. Open to all members. President Higgins, Presiding.
Roll call of members of the Board of Governors.
Nominations and election of Executive Committee Members from Regions 1, 3, 5 and 7.
Report of the Executive Committee—L. C. Chadwick, Dept. Hort., Ohio State University, Secretary.
Nomination and election of Membership Committee Members from Regions 1, 4 and 7.
Report of the Budget Committee—Paul E. Tilford, Executive Sec., National Arborist Association, Chairman.
Report of the Secretary — L. C. Chadwick, Dept. Horticulture, Ohio State University, Columbus, Ohio.
Report of the Editor—Paul E. Tilford, Executive Secretary, National Arborist Association, Wooster, Ohio.
Old Business.
New Business.
10:15—Foliar Application of Nutrients—Dr. P. P. Pirone, Brooklyn Botanical Garden, New York City, N. Y.
11:15—The Importance of Chlorophyll for Tree Growth—Dr. H. C. Eyster, Charles F. Kettering Foundation, Antioch College, Yellow Springs, Ohio.

P. M.
12:15—Busses leave for Mt. Airy Forest
Luncheon at Oak Ridge Lodge
Tour of Mt. Airy Forest and Spring Grove Cemetery
Interesting Trees and Plants

EVENING
7:00—Dinner and Meeting of the National Arborist Association. Pavillon Caprice, 4th Floor.
8:00—Municipal Arboriculture and Forestry. Hall of Mirrors, 4th Floor.
Meeting of City Foresters, Park Superintendents and other interested in Public Area Tree Management Problems.
Subjects: Brush Disposal and Stump Removal.
Other Problems.
Discussion Leader: F. E. Karpick, Bureau of Forestry, Buffalo, N.Y.

THURSDAY, AUGUST 30

A. M.
Session Chairman: Noel B. Wysong, Vice President, National Shade Tree Conference.
9:30—Symposium: Prevention of Storm Damage by Proper Pruning, Bracing and Selection of Transplanted Species.
Leader: Oscar F. Warner, Land-

(Continued on Page 24)

Please mention TREES when writing Advertisers.

THE PROGRESS OF HORTICULTURE

By R. R. FENSKA, *Sec.-Treas.*
Westchester County Tree Protective Association

(Graduation Address, Class in Botany and Horticulture, New York Botanical Garden, New York, N. Y., June 22, 1950)

Introduction. Some years ago there was an inmate in one of our western penal institutions who aspired to literary heights. One of his poems was read with much admiration by his fellow prisoners. Even the warden was impressed and asked permission to give it to the editor of the local city newspaper. The editor thought enough of it to publish it in one of his Sunday issues. Other papers throughout the state copied it until it had a wide circulation. One of those who eventually saw it in the papers was the well known "Lumberjack Poet," Douglas Malloch. After he had read it, he thought it had a familiar sound. In the perusal of his old manuscripts he found his original copy. He sent it to the warden with the following note: "If this is what this man is in jail for, let him out."

A prominent horticulturist has stated that all our apple trees have originated from the Asiatic crab-apple tree. According to Pomologists there are at least 28,000 varieties of apples in the world today. In fact there are so many different varieties that no one man could hope to identify all of them. This is cited to show what can be done with one plant genus through methods of selection and hybridization. Just how much the early horticulturists of Asia Minor knew about the technique of hybridization and cross-breeding of plants we do not know. Early man kept much of his knowledge secret. Botanists were linked with the medicine-man or doctor. Linnaeus, the Swedish scientist, was of the opinion that the different kinds of plants never changed. It was not until the latter half of the 19th century that Charles Darwin (1809-82) and Gregor Mendel (1822-84) gave us the doctrine respecting the origin of species from more primitive forms, and the Mendelian law of heredity in plants. Both men supported their theories with a great mass of facts from nature.

While these investigators gave us some fundamental principles of plant development they did not complete the job. For instance, the well known MacIntosh apple first appeared on a single seedling in Alberta, Canada, which had little resemblance to the fruit from the parent tree of the seedling. The Dutch botanist, Hugo DeVries (1848-1935) calls this "mutation," or the sudden appearance of startling new properties or functions in the offspring from the parent plant. He changed the study of evolution from observation to experimental work. The true explanation of the origin and development of new varieties of plants lies possibly in some combination of facts of these different theories. Man has not reached the peak of development in this field.

Luther Burbank (1849-1926) carried on extensive experiments in plant breeding by selection, crossing and grafting and produced among other new and desirous varieties the spineless cactus, the Shasta daisy and the seedless apple.

Right now scientists are trying to develop, through cross-breeding, plants which are immune to certain insects and plant diseases. They want to rid the world of inferior species and develop a superior and better plant kingdom. It may be the beginning of "plant eugenics."

Experiments with poplar hybrids have demonstrated that certain strains of hybrids vary from practical immunity to complete susceptibility of defoliation by Japanese beetle. This has justified experiments to hybridize spruce species in the hope that they may produce strains resistant to budworm attacks. Also, successful hybridization between maple species and crosses between species of ash have recently been reported by the United States Forest Service. The rapid dying off of our native paper birch throughout its range due to a combination of factors known as "die-back" has led to cross-breeding of our white or paper birch with gray birch with the aim of producing an improved birch resistant to "die-back." The hybrids produced so far are intermediate in growth-rate, that is, faster than paper birch but not so fast as gray birch. It is interesting to note that hybrids often show more sustained growth than parent species. The production of fast growing, as well as insect immunity and disease resistance, is not only of great importance to the forest industries but also to the arborist and the horticulturist as well.

The greatest problem facing the gardener, arborist and horticulturist today is the control of insects and diseases on our crops and desirable shade and orchard trees. During the past seven or eight years many new spray materials have been developed for the control of our insect pests and plant diseases. Some were hailed as miracle bug-killers. Unfortunately, most of them were placed on the market faster than experimental results warranted. Too much was expected of them. When the so-called D D T (Dichloro-diphenyl-trichloroethane) insecticide became available for civilian use after the Second World War it brought a new concept of insect control to the gardener and horticulturist. They were told that one spraying would last for weeks, or even months, and would eliminate practically all pests. The insect merely had to walk over foliage sprayed with this material and in a matter of minutes be paralyzed. It was soon discovered, however, that while it would kill insects that were undesirable it would also eliminate some predatory varieties that were desirable. In other words, it had the tendency to upset the "balance in nature" with disastrous results. Today we are leaning more to the opinion that in the future we will have specific sprays for each insect pest or plant disease, rather than an all-purpose spray material. We must learn to control our ever-increasing insect problem, or, as one prominent entomologist once predicted, "The bugs will inherit the earth." This is a real challenge and involves the work of the entomologist, the chemist, and the botanist working on the same problem. The entomologist must determine the most vulnerable link in the life cycle of each insect, the chemist must find a suitable compound that will destroy insect, and the botanist experiment with foliage and plant tissues to find the insecticide that will not injure the plant. Thus, it is apparent that the "dream spray" of every amateur, one that will do the job for all insects and different plants, will always be just that, a dream.

We must also mention here the recent experiments with the hormone compounds. These have been developed for use in the garden or orchard to assure a satisfactory fruit-set, to prevent premature drop of the fruit, or in the case of transplanting, to hasten the re-establishment of the plant by stimulation of root growth. When the use of these materials has been perfected they will be a boon to gardeners and horticulturists.

On the other hand there are instances where suppression or regulation of abnormal growth is desirable. For example, when nursery stock has been held in cold storage for a long period and then exposed to high temperatures the following Spring it may readily develop undesirable soft shoots. Recent experiments have indicated that this can be avoided if the plants are kept dormant by spraying them in the Fall or early Spring with maleic hydrazide.

Another current development is the

(Continued on Page 16)

Recent Developments In Oak Wilt Research

By James E. Kuntz
Department of Plant Pathology,
University of Wisconsin,
Madison 6, Wisconsin

During the past decade, a serious disease of oak trees called "Oak Wilt" has spread alarmingly among shade and woodland trees in certain states east of the Great Plains. The disease has been known for several years in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The annual reduction both in timber harvest and value has been substantial, even though immediate salvage of mature wilting trees is possible. More recently it has been reported in Arkansas, Indiana, Kansas, Ohio, Nebraska, and Pennsylvania. Undoubtedly, further search will reveal its presence both in new areas within these states as well as in other neighboring states.

The first description of oak wilt as a definite disease was published in 1942. The exact time, place, and manner of its origin remain a mystery, however. The evidence is clear that it was active in 1929. Possibly it has been present for years, but it may have been confused with injury caused by certain other diseases, drought, insects, or what not. Whether or not it is new does not change its present importance, its rapid spread, and its increasing significance.

Since the original report of oak wilt in 1942, investigations have been undertaken at various experiment stations. Studies are already in progress in Illinois under the direction of Tehon, Carter, and Wysong; in Iowa under Bragonier, Hoffman, and Schuldt; in Missouri under Bretz and Tucker; and in Wisconsin under Riker, Kuntz, and Beckman. Certain other states in which the oak wilt disease recently has been found have now undertaken research programs on this problem.

During the summer of 1950, the Division of Forest Pathology of the United States Department of Agriculture conducted an aerial survey to determine the extent of the disease and its damage to the oak timber stands of the Ozark Mountains area. Preliminary reports indicated that oak wilt was generally distributed throughout southern Missouri but much less prevalent in northern Arkansas where it was limited to small, isolated infection centers. No confirmed cases of oak wilt were found in western Kentucky or Tennessee.

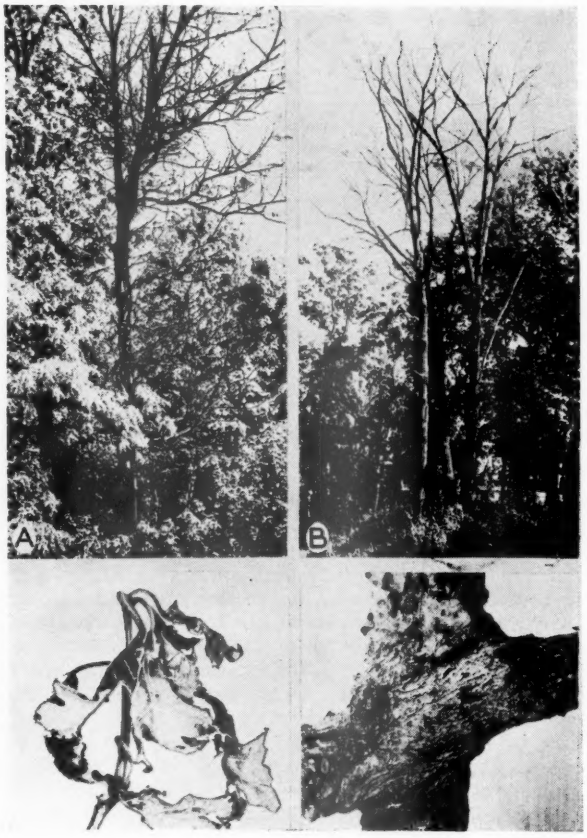


Fig. 1—(A) Black Oak with a 10 inch d.b.h., which died following inoculation. (B) A group of oak trees that died in nature, with symptoms of oak wilt. (C) Twig from inoculated black oak showing wilted young leaves. (D) Roots of white oak showing anastomosis. Courtesy Phytopathology.

Oaks Are Exceedingly Valuable

The recent discovery of the oak wilt disease in these extensive southern and eastern forests emphasizes the threat of the disease to timber areas of great commercial value. Oaks comprise about one-third of the total volume of hardwood saw timber in eastern United States. By providing the most important hardwood lumber, oaks support major industries which use oak wood for many purposes, including lumber, cooperage, cross ties, flooring, and heavy timbers. Representatives of many of these oak-using industries have organized the so-called National Oak Wilt Research Committee to enlist the support of industry in research on this disease.

Loss in aesthetic value also occurs when shade trees die in lawns and parks. Frequently people pay premium prices for building sites in oak woods—only to have their trees killed one after another with the oak wilt. Removal and replacement of wilted trees are usually difficult, costly, and unsatisfactory. Parks may be changed completely in character. For example, at Devil's Lake State Park more than 100 oaks have been removed annually during recent years. Oak wilt has almost ruined Nob Hill State Park in Iowa, where thousands of oaks have been killed.

All Oaks Are Susceptible

Unfortunately, all species of oaks so far either subjected to natural infection or tested by artificial inoculation have proved susceptible to oak wilt. However, some kinds of oak trees are more tolerant of oak wilt than others. In addition to oaks, the causal fungus has been isolated from naturally infected Chinese chestnuts having oak wilt symptoms. The susceptibility of the Chinese chestnut to the oak wilt may aggravate the problem of developing disease-resistant chestnuts.

Appearance of Oak Wilt

Disease development, symptom expression, and spread both within and between

trees differ somewhat according to the oak species infected. The disease usually is more severe on trees of the red oak group than on those of the white oak group. In many areas where the disease has moved through a mixed stand, only white and bur oaks remain.

On red and black oaks, the first symptom is a slight curling and dull paling of the older leaves, usually near the top of the trees or towards the tips of lateral branches. Affected leaves gradually become bronze to brown progressively from the tip or margins toward the base. The mature leaves remain relatively stiff all during symptom development. Young leaves, however, "wilt" and droop conspicuously. Usually the swollen base of the leaf petiole becomes dark.

The affected leaves may fall during any of the symptom stages. Property owners, although unfamiliar with the curly leaf symptoms, invariably are struck by this premature defoliation which necessitates repeated raking of leaves under infected lawn trees. Sometimes, however, defoliation may be slight and most of the dead leaves may remain on the tree.

Secondary sucker growths in the form of dense clusters of large, succulent leaves often appear on the trunk and larger branches after the original leaves have wilted. False hopes of tree recovery, however, soon fade. In a few weeks this new growth, in turn, wilts and dies.

The leaf symptoms progress rapidly over the entire crown of the tree commonly affecting the lower branches last. Usually discoloration, dying, and defoliation are complete within a week or two. Examination of the annual rings indicates normal growth of the tree to the time of its death.

External foliage symptoms may or may not be accompanied by brown to black discoloration in the outer annual ring. Peeling back the bark on twigs and branches sometimes may reveal either diffuse tanning, stippling, or intermittent streaking. Such discoloration, however, may be absent especially if infection has been rapid. Moreover, it should not be confused with vascular discoloration from other causes.

All symptom stages have been found from the latter part of May until late September when natural autumn coloration masked the leaf symptoms. Trees of the red oak group usually die during the same summer in which the first symptoms appear, but occasionally an infected tree may live over winter. In such cases, the larger branches leaf out partially the following spring, only to die soon afterwards.

No tree of the red oak group has been known to withstand the disease, or once infected, to recover. Hence, there appears little immediate hope of finding a naturally resistant selection within this group. Stump sprouts from wilted trees likewise die so that normal regeneration is prevented.

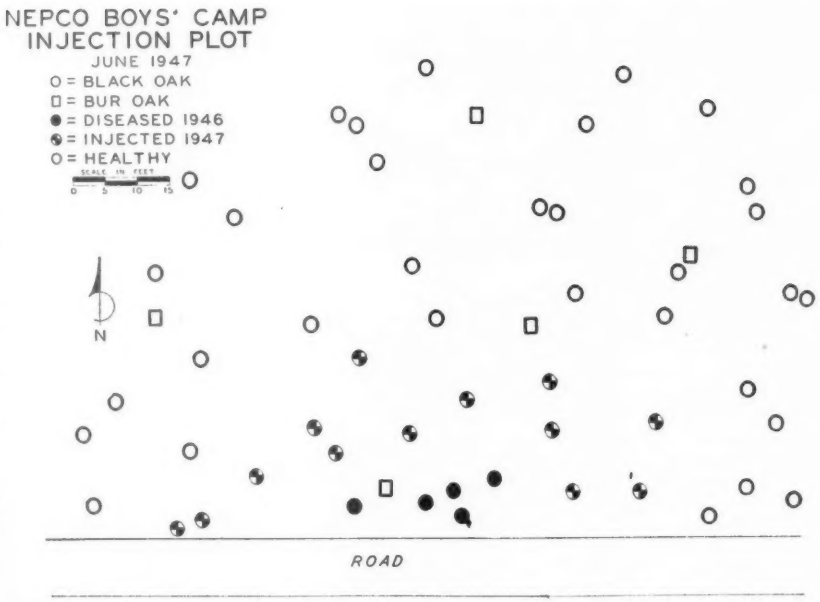


Diagram of an oak wilt area in which the local tree-to-tree spread has been stopped for 4 years by poisoning (injected) the adjacent healthy trees.

On white and bur oaks, the symptoms differ somewhat from those on black and red oaks. Usually an entire white oak tree does not wilt at once. Twigs with dead and dying branches often are scattered throughout the crown. Some branches show leaf symptoms while others remain outwardly healthy throughout the season. Moreover, the withered, dead leaves tend to remain on the trees so that leaf fall is seldom as heavy as in the red oak group. Most trees show dieback of the upper branches to varying degrees so that eventually a "stagheaded" appearance results. Twig dieback and general stagheading, however, may result from other causes. Infected trees may survive for some years. Trees occasionally appear perfectly normal for one or more seasons following the original infection except for the dead branches killed in previous seasons. For this reason, many people insist on allowing infected bur and white oaks to remain, although they conscientiously remove the obviously dying red and black oaks.

A Fungus Causes Oak Wilt

The oak wilt disease is incited by an extremely virulent fungus named *Chalara quercina* Henry. The fungus has been observed in and isolated from the water-conducting vessels of the last 1 or 2 annual rings. Symptoms may follow artificial inoculations into vascular tissue within 3 to 6 weeks. Once infection has taken place, the spread of the fungus throughout red oak trees is rapid.

The fungus lives from one season to the next in infected trees, for at least a year in the roots of red and black oaks, and for a much longer time in the crown of white and bur oaks. Even in the branches of killed trees, the organism may remain alive for several months.

Local and Distant Transmission

Oak wilt spreads in at least two different ways. In one case it "jumps" considerable distances—anywhere from a few hundred yards to more than a mile into previously healthy trees. How this happens remains to be discovered. Among the possible vectors suspected are birds, various insects, and rodents.

A second type of spread is the progressive movement in local areas from diseased to adjacent healthy trees. Ordinarily, starting from a single infected tree—in many cases one of the tallest trees of the stand—the disease gradually progresses from tree to tree in a more or less irregularly concentric pattern. Radial spread outward from the infection center usually involves only one or two "tree-depths" per season. After a few years an active wilt area contains dead and decaying skeletons at the center, recently-killed trees with loosening bark next, and an outer border of dying trees in various stages of wilt. Only rarely do black or red oaks escape this outward invasion. Moreover, if bypassed, red and black oaks usually become infected within a few years. On

(Continued on Page 18)

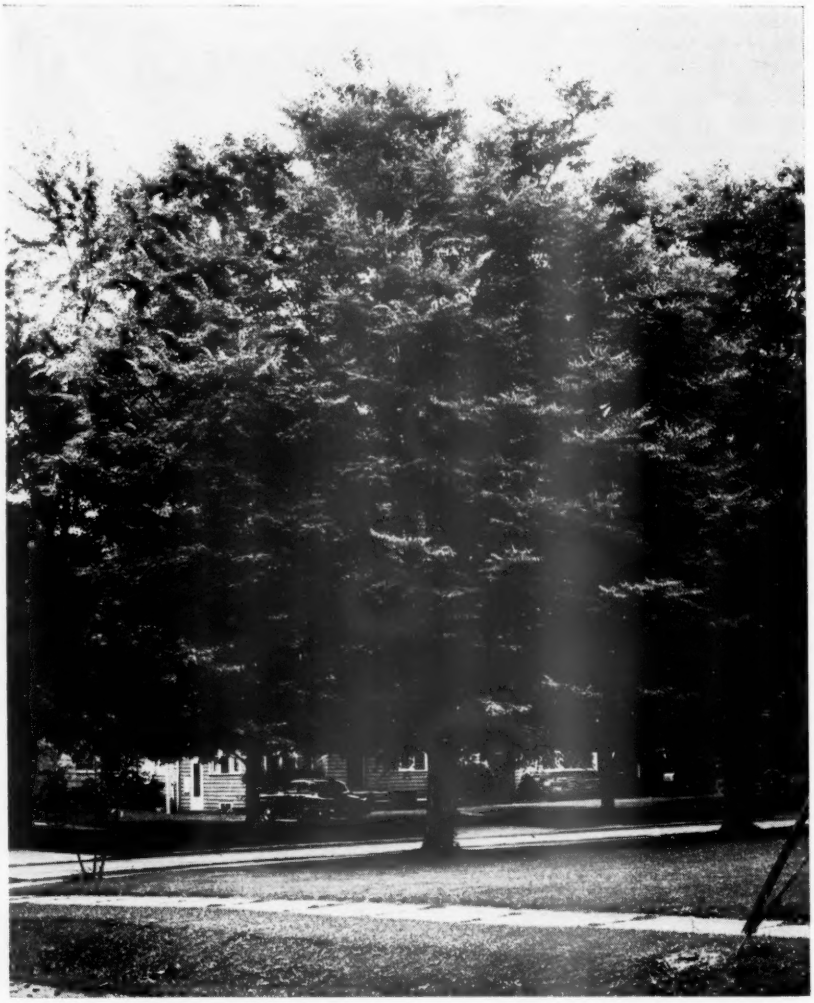
90 Trees for Changing Street and Home Trends

By Edward H. Scanlon
Commissioner of Shade Trees
City of Cleveland, Ohio

It has long been the contention of the writer that the economic and cultural value of well considered and maintained trees on city streets is a seriously overlooked phase of city planning. By "well considered" is meant scientific evaluation of the space and site wherein the tree citizen is expected to serve his community, and well, for the next forty or fifty years.

Basic consideration in this citizens tenure of service is that it serve well; not irritating people; not costing unnecessary sums for maintenance of its position in the community. It must impart beauty, comfort and respect. It can if it is tailored for its role. It must be chosen well, with every consideration given to the complaints that daily come across the desk of every municipal shade tree administrator. The faults causing the complaints should not be committed over and over again; to assure that they will not be, the planting job on city streets can no longer be accomplished thru the use of only five or six or ten species of trees. Rather the job in its diversity definitely calls for a minimum of at least 90 species and varieties. Botanically the list will vary in the several plant zones over the country, but generally no less than 90 species and varieties are needed to give adequate selection to meet the diverse combinations of site factors that are presented in the street planting program of a large, medium or small American city.

The list must contain trees of every form available. Uprights, globes (large and small); small and large umbrageous types; vase shaped; foilage features; flowering; various soil tolerances, as well as atmospheric tolerance. With such a complement we have a tree that will fit, not conflict in almost any street tree situation—provided we take the time and energy to select it carefully. It might be noted that if the selection of a tree for a street is done on a scientific basis, rather than to take just any tree available, there then exists a desperate need for a wide variety of small trees (18'-25') and small globe-heads.



A fine specimen of the beautiful Zelkova serrata in a Cleveland, Ohio, suburb (Fairview). The Zelkova, or Japanese Keaki, is a member of the elm family; is resistant to Dutch elm disease; attains a miniature American Elm form; has been planted on a number of Cleveland streets, and is being grown in quantity for future planting.

As an example of the fine effect imparted by a small globe-head note the Globe Locusts in the cover picture. This street, W. 33rd St., between Clark and Trowbridge, in Cleveland, is in a very old section of the city. In fact the area has been the subject of several studies by the City Plan Commission with the object of how to give it a lift. We think the answer is in the cover picture. This street had the usual conglomeration planting seen in old districts. We removed every tree, for which we were blessed by the residents (no kidding) and planted the Globes, at 55', in the spring of 1948. The picture was taken in August, 1950, after nearly 3 growing seasons. Borers are controlled easily with a dormant DDT spray applied cheaply and fast with a mist sprayer. Other considerations on this street were low wires and a shallow setback. The fast effect given by this tree makes it an indispensable part of the City Arborists tool kit, but slower growing, more durable small globes are needed.

The woes that have befallen the street tree situation in this country can be attributed directly to three basic mistakes—(1), *overplanting or crowding;* (2), *out-of-scale planting,* trees too large for the ground or aerial space available, and (3), *insufficient maintenance.*

In our program at Cleveland, during the past five years, we have attempted to avoid these three mistakes. First step was to scour the market for available trees. Outside of American Elms and Silver Maples, which we had no use for, very few good species and varieties were available, and in limited quantities. However by diligent shopping we did manage to obtain a few hundred each of some of the form trees we needed, such as, uprite Norway maple, Wheatley elm, Globe Locust, uprite Sugar maple, Willow, Texas and Shingle oak, Maackia amurensis, Sophoras, Pauls Scarlet Thorns (beautifully grown stuff) and one or two others. These and others obtained still did not give us the selection with which to plant all of the streets on our agenda. Since the beginning of our program we have used a total of 43 species and varieties, and contrary to what some might think, none of these has proven a failure. There has been some failure, for example, two streets were planted to *Quercus serrata.* One street was hand dug, in clay, the other dug with the Buda Earth drill. On the later street every tree is doing beautifully—we had to remove the straggling survivors of the first street. This is an example of mistake No. 3—*Insufficient maintenance.* Also along this line we have, I believe, a field of thought in regard to "what tree is a street tree," that believes a tree cannot be considered a "street" tree unless it will survive after planting with absolutely no care. This is probably one of the reasons why our streets are messed up with American elms, Pin oaks, Silver maples, catalpas, Chinese elm and other such stuff, which will probably survive about 75 per cent on such a basis. The result is a hit and miss planting, filled in here and there with some "weed" tree by the abutting home owner—out of scale and crowded usually. There are perfect examples in every city of "how not to do it" so there is no excuse at all for committing the three cardinal sins of street tree management if there is sincerity of purpose and effort behind the program. We know now, if we know anything, that care in planting and after care are much more important than the selection of species. Practically any tree, within reason, will live and thrive along most city streets. The list we have used including trees raised in our own nursery and those purchased follows:

UPRIGHTS

Wheatley Elm—U. carpinifolia sarniensis
Golden Elm—U. carp. wreidei
Sugar Maple—Acer saccharum fastigiata
Norway Maple—Acer platanoides pyramidalis

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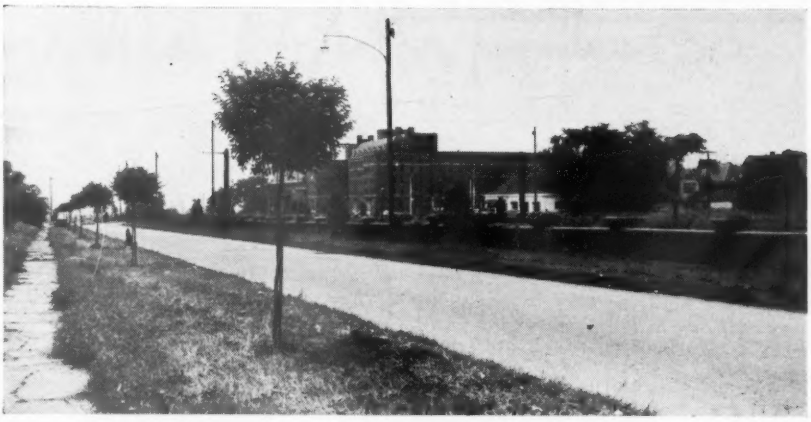


One of the new functional plantings on Cleveland streets. On the tree-lawn is the beautiful, low maintenance Globe elm (U. carpinifolia umbraculifera). In the strip along the background wall is the Wheatley elm (U. carp. sarniensis). The Wheatleys (a pyramidial form) are planted 25' on each side of each lighting standard, with a 100' gap between such groups. The Globes are 55' apart. The street is Shaker Blvd.

This street of fine apartments could not stand an overburden of huge trees. In the tree lawn the Willow oak (Quercus phellos) was planted at 65'. It will make about 30' in this area. The center strip was planted with the pyramidal Wheatley elm (U. carpinifolia sarniensis) at 45'. Consideration was to obscure the ugly power lines in center strip and not leave an overhanging tree on this busy street (Moreland Drive).

A comparatively simple residential street but with a shallow setback and three foot treelawn. A big spreading tree would soon become an expensive nuisance. The pyramidal Norway maple (Acer platanoides pyramidalis) will never overhang houses, lift the sidewalk or become a nuisance. It will impart dignity and give sufficient shade planted at 50'.

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

Cincinnati Meetings

"And the woman said unto the serpent, We may eat of the fruit of the trees of the garden:

"But of the fruit of the tree which is in the midst of the garden, God hath said, ye shall not eat of it, neither shall ye touch it, lest ye die."

Thus in the third chapter of the book of Genesis is recorded the first discussion on trees. Since the very beginning of time man has had close association with trees and has cultivated and used them in many ways.

For one who likes trees there is no greater pleasure than to talk about them with friends who have a similar feeling. That is the reason for the successful meetings year after year of the National Shade Tree Conference and the National Arborist Association. This year's meeting will be the 27th for the Shade Tree Conference and the 13th for the National Arborist Association. Many members who will be at Cincinnati have attended every meeting of both organizations. People just don't do that, unless they get their money's worth of pleasant fellowship and good sound facts which can be taken home and put to use.

The Conference program is given elsewhere in this issue of Trees Magazine. This year's program is one of the best and a record attendance is expected. This is the first time for the Conference to meet in Cincinnati and there is a lot to see.

The National Arborist Association will hold a full day meeting of its members on Monday, August 27, prior to the official opening of the Conference on Tuesday. The Association program will be panel or forum discussions of the problems in operating commercial tree service companies. Karl Amalia, Amalia Tree Surgeons, Inc., Manchester, Mass. will be moderator during the program dealing with private tree work. Karl Kuemmerling, Forester to Public Utilities, Canton, Ohio, will act as moderator on tree work for utilities.

The Association's annual dinner and business meeting will be held Wednesday evening, August 29, with President Walter P. Morrow, Morrow Tree Company, Sewickley, Penna., presiding. Walt just returned from attending the Western Shade Tree Conference at Portland, Oregon, and will have some interesting observations to report.

We expect to see you in Cincinnati.

Elm Phloem Necrosis Spread Slow in St. Louis

In most locations in southern Ohio, Indiana, and Illinois where elm phloem necrosis has appeared there has followed a rapid build up in the number of diseased trees. This annual increase, typically, reaches a peak after some 5 or 6 years, and then, after most of the elms have died, incidence of the disease decreases.

St. Louis County, Missouri, seems to be an exception to the usual pattern. Phloem necrosis was first observed there some 6 or 7 years ago. A fairly large number of Moline elms, particularly in one section of St. Louis, were killed and the disease occurred in some regular American elms. Large numbers of American elms grow in and around St. Louis. When the disease first appeared it was expected to spread rapidly as had been the case other places. But this has not happened to date. The disease is still killing some elms in St. Louis, but the number of diseased trees has not increased appreciably from year to year. I have been in St. Louis each year in July or August since phloem was first found there. On a recent visit no more phloem necrosis elms were observed than were seen 5 years ago.

I know of no explanation for the slow spread of the disease in St. Louis. I suppose an unusually high percentage of the elms of the area could be resistant. Or it could be that the leaf hopper which transmits the phloem necrosis virus is not as numerous there as in areas where rapid spread has occurred. Anyway tree lovers in St. Louis hope that the unusual situation continues.—P. E. T.

Odd-i-Trees

The origin of this roadside planting has been traced to sprouts from the Sycamore logs which were thrown into the swamp to provide the original corduroy road about 1840. Today the Deer Creek Sycamores are known far beyond the confines of the state and are being carefully preserved.

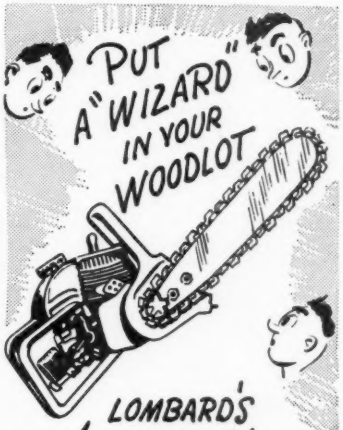
The odd thing in this day and age is that here is a road of natural trees, almost one-half mile long, some of them only four feet from the traveled way, and no fatal accidents have been recorded in this stretch.

H. J. Schnitzius, Indiana Highway Dept.

—Along The *Buy*-Way—

New Earth Auger Attachment For Power Chain Saws

A newly designed earth auger attachment for gasoline engine chain saws is now being produced by the Mall Tool Company of Chicago. This hole-digging unit is made for use on Mall Model 11 gasoline engine chain saws. The chain saw assembly is detached and replaced with the auger attachment for drilling holes for guard-rail posts, power and communication poles, retaining wall supports, fence posts and planting seedlings. It equips with 30-inch augers in either 6, 9 or 12 inch diameters. A swivel coupling at the engine allows the auger and permits drilling at angles. The auger can also be reversed in rotation. to be swung to the side for easier storage



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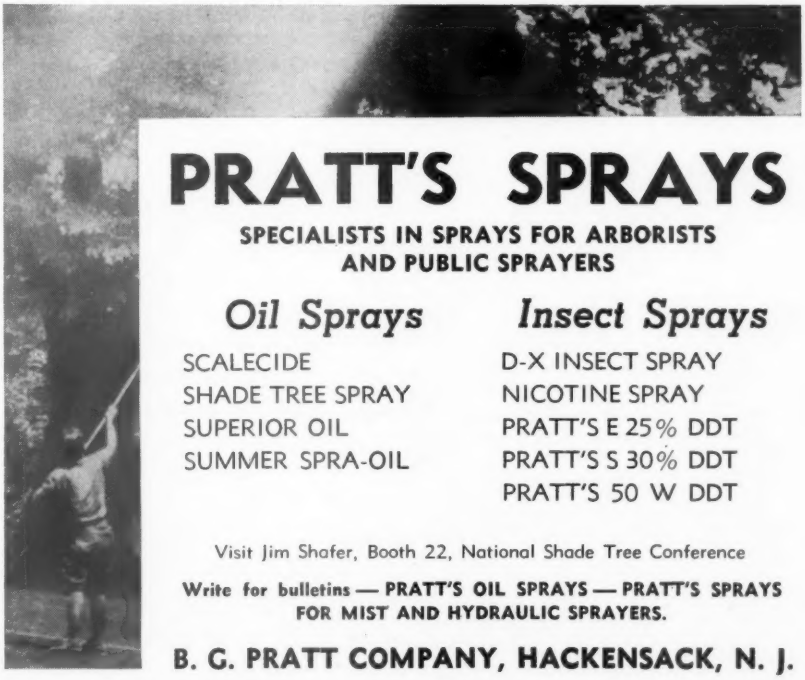

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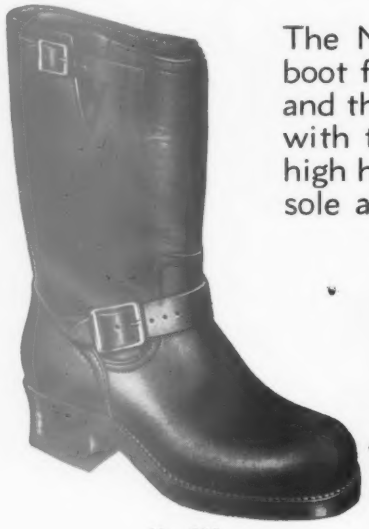
Our No. 216 boot is the old standby. It has been copied which proves that it is good enough to have been imitated. Several improvements have not yet been imitated. The No. 229 is a 10" companion of the No. 216 used by those who do not like to wear breeches.

The No. 255 is the high engineer's boot for those who like a slip-on boot and the No. 911 is an 11½ inch boot with the low heel. The No. 611 is a high heel boot. Both have a slip proof sole and heel.



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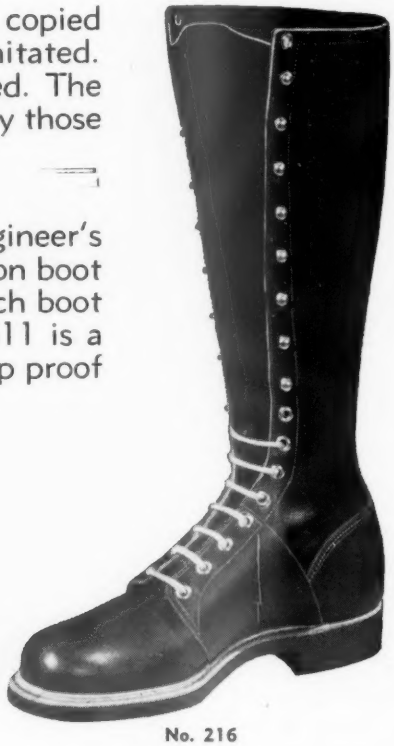

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We have in stock the new Aerial Power Saw Carrier which makes it safe and economical to use a gas chain saw in a tree.

Magnesium alloy wedges for chain sawing.

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PICTURES tell a success story for chemical brush control! Shown is a right-of-way contrasted with the same area before it was sprayed two years ago with Esteron Brush Killer.

Clearance and maintenance of right-of-ways overgrown with vegetation is an expensive, time-consuming job when the brush must be removed mechanically. Furthermore, cutting gives only temporary relief—while with chemical herbicides, regrowth is suppressed and eventual elimination of the original stand of brush is achieved.

Dow has developed weed, brush and grass killers that save you 25 to 50% over hand-cutting or other mechanical methods. Contact your nearest Dow sales office.

Esteron Brush Killer is a mixture of low volatility Butyl Ether Esters of 2,4-D and 2,4,5-T. This product controls woody and herbaceous plants including alder, ash, birch, brambles, cherry, elm, hickory, maple, oaks, osage orange, poison ivy, sumac, willow, and many other species. Also effective for treating stumps to prevent resprouting.

Esteron 245 contains low volatility Propylene Glycol Butyl Ether Esters of 2,4,5-T. This product controls woody plants in the same manner as Esteron Brush Killer. It is particularly effective on 2,4-D resistant species such as brambles, hawthorn, mesquite, osage orange, palmetto, and poison ivy. Also very effective for stump treatment and dormant basal bark application.

Sodium TCA 90% controls annual grasses and established perennial grasses including Johnson, quack and Bermuda. Mixes readily with 2,4-D for weed as well as grass control in the same application.

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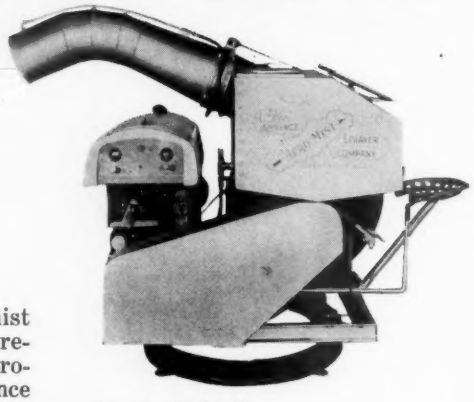
Cut Shade Tree Spraying Time

with an

AERO-MIST L-80 SPRAYER



This fast, easy-to-operate mist sprayer is unequaled for best results in shade tree spraying programs. The versatile Lawrence L-80 handles all formulations . . . gets at all leaf-eating insects and fungus infections . . . thoroughly covers the highest trees with penetrating mist spray . . . provides lowest operating costs in labor and materials.

COMPARE THESE FEATURES

High pressure pump . . . mechanical agitation . . . 42 H.P. water-cooled engine with clutch . . . 360° rotation . . . finger-tip control . . . weighs only 1500 pounds . . . 8,000 c.f.m. at 150 m.p.h.

Be sure to see the Aero-Mist L-80 at the National Shade Tree Conference in Cincinnati. We'll be looking for you at the Lawrence booth (No. 6).

LAWRENCE AERO-MIST SPRAYER CORP.

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FOR BETTER EASIER PRUNING!

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And the Greatest Pruner Value Ever!

2 NEW ONE-HAND PORTER PRUNERS

8A—DURACUT is an anvil type pruner designed and manufactured to cut better and easier and to last longer than other anvil-type pruners. 8S—DURASHEAR is a shear-type tool with quality design features previously found only in the most expensive pruners. Both are designed with special steel cutting blades to practically eliminate spreading . . . with plastic-covered grips for no slipping and no blisters . . . with positive thumb locks. Famous Porter quality and design throughout.

See the complete Porter line at your regular supply house . . . pruning tools for every pruning purpose. Send for catalog.

H. K. PORTER, Inc., Somerville 43, Massachusetts

PORTER CUTTERS PORTER PRUNERS

Porter-Ferguson Hydro-Method for Auto Body Repairs

Horticulture

(Continued from Page 7)

application of a nutrient element in the form of a spray solution directly to the foliage of the plant. This is revolutionary. If present experiments prove feasible it will be possible to invigorate an ailing plant with a "shot in the air" instead of the ground. However, the cost of supplying nutrients to plants by this method makes it more of a special treatment to be used under certain conditions rather than as a substitute for the accepted practice of fertilization of the soil.

The recent development of tree surgery is also noteworthy. In 1790 William Forsyth (1737-1804), Gardener to King George III, published his treatise of the treatment of the wounds in fruit and forest trees. It was a crude method compared with our present-day materials and technique. The development of the so-called "Bartlett Heal Collar" has been the most important factor in the success of our modern method of treatment of cavities in trees. This Heal Collar serves to seal the cavity against air and moisture and protects the cambium cells from drying out, and thus promotes continuous callous growth at the edge of the wound.

The development of the new technique for control of certain tree diseases by means of chemotherapy is probably the most fascinating of recent progress. By this method special chemicals are injected into the sap stream of a tree to counteract the toxic agents produced by such diseases as the "Bleeding Canker" which attacks some of our most desirable shade trees. Many diseased trees heretofore considered incurable can now be saved. Experiments on chemotherapy for the control of the Dutch Elm Disease are now in progress and indications are that it is possible to condition trees to resist the disease by employing certain chemical combinations. The future development of this method of treating plants holds great possibilities.

Thus, with the ever-increasing interest in botany and horticulture and its practical application, all the different experimentations in this field are going ahead faster than ever before. It is for the future scientists to give us the final answer to many of our present horticultural problems, if there is a final answer. In such progress the amateur can have a definite place. A scientific background is not essential to the technique of cross-breeding. The method is relatively simple. It was a small garden that gave the amateur Luther Burbank his first inspiration for the creation of his many varieties of plants. There may be

(Continued on Page 24)

Courtesy Division of Shade Trees, Cleveland.

BUY TWO
get the effectiveness
OF THREE

Pennsalt DDT Emulsion Concentrate "34" has many important advantages for the arborist. Here are a few:

- One-third less material to handle and store.
- Less solvent used per pound of DDT.
- Less run-off or drip of active ingredients.

Why handle three drums of low DDT-content emulsion concentrate when two drums of Pennsalt "34" will give you effective coverage . . . with one-third less solvent?

Careful compounding holds three pounds of DDT in one gallon of solvent. When water is added to make the desired spray strength, a fast-breaking emulsion is formed. This means that more of the active ingredients stay where they belong, with little run-off or drip. Result: Greater effective coverage—whether you use mist concentrate or hydraulic equipment.

In addition, of course, with Pennsalt "34" you have one-third less material to handle and store . . . less solvent on the trees and many other advantages. Arborists everywhere are learning about the convenience, economy and relative safety offered by Pennsalt DDT Emulsion Concentrate "34". This season *"Spray the Pennsalt Way."*

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Please send me a free copy of Bulletin 201, "Spraying Shade and Ornamental Trees."

NAME .....

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Oak Wilt

(Continued from Page 9)

the other hand, bur and white oaks growing in mixed stands often escape infection and usually are the only oaks remaining in a wilt area.

No correlation has appeared between the severity of the disease or its rate of spread and differences in soil or site.

This latter tree-to-tree type of local spread has been studied intensively. Digging and washing out of tree root systems have revealed abundant and widespread natural, underground grafting of oak roots. As a result of such grafting, trees in a dense stand appear interconnected. Water, dyes, poisons, and, probably most important, the spores of the oak wilt fungus readily moved through these grafts. Such movement, both within and between different species of oaks, has been traced with a Geiger counter using radioactive isotopes. The movement of these "hot" solutions closely corresponded to the development and spread of oak wilt. Root grafts between individuals of a species of the red oak group were found to be numerous, grafts between individuals of the white oak group only occasionally, and grafts between individuals of these two groups only rarely.

Normally, such graft unions can benefit the "tree community." But they are harmful when oak wilt strikes. Through these underground channels, the fungus has direct "pipelines" from tree to tree.

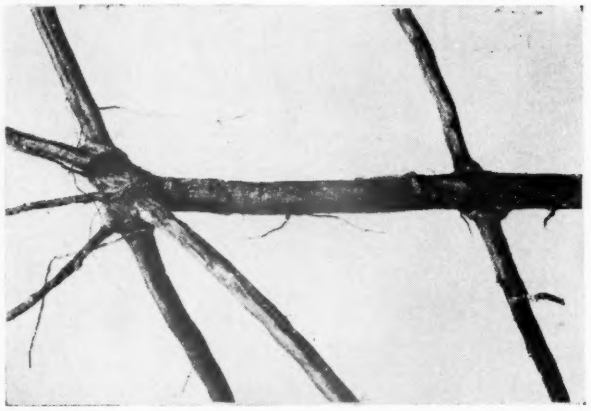
Local Control Seems Promising

With the discovery of natural root grafting in oak stands and the passage of the oak wilt fungus through these connections, several possibilities for local control have appeared. Immediate removal of each wilting tree over a period of years has retarded the disease in 11 out of 18 Wisconsin study plots. In 4 of these plots no new wilt has appeared for 2 years. Where single, newly wilting trees were poisoned, no spread has occurred either in 6 one-year-old plots or in 3 two-year-old plots.

In woodland areas where individual trees were of relatively low value, poisoning healthy trees bordering a wilt area has prevented further local spread in 12 plots of which 6 were four years old.

For lawn and park areas where each individual tree was of great value, the severing of all root connections, both mechanically and chemically, has been tried. In 10 plots, trenching or cutting between wilting and healthy trees has prevented further spread in experiments started two years ago.

For trees in the white oak group, less drastic measures are being studied. Careful and rigorous pruning of all wilting branches has been reported to prolong the life of an occasional tree. How dependable this may be remains to be determined. Meantime, records are available where the oak wilt fungus remained dormant in wood of infected white oaks for several years.



Natural grafts underground between the roots of two northern pin oaks.

For additional information see:

1. Dietz, S. M., and Roy A. Young. Oak wilt—a serious disease in Iowa. Iowa Agr. Exp. Sta. Bul. P91. 1948.
2. Henry, B. W. *Charlara quercina n. sp.*, the cause of oak wilt. Phytopath. 34: 631-635. 1944.
3. Henry, B. W., C. S. Moses, C. Audrey Richards, and A. J. Riker. Oak wilt: its significance, symptoms, and cause. Phytopath 34: 636-647. 1944.
4. Henry B. W., and A. J. Riker. Wound infection of oak trees with *Chalara quercina* and its distribution within the host. Phytopath. 37: 735-743. 1947.
5. Kuntz, J. E., and A. J. Riker. Oak wilt in Wisconsin. Wis. Agr. Exp. Sta. Stencil Bul. 9. 1950. (Literature cited.)
6. Young, Roy A. Studies on oak wilt, caused by *Chalara quercina*. Phytopath. 39: 425-441. 1949.

1 Condensed from an illustrated talk given before the Midwestern Chapter of the National Shade Tree Conference at Chicago, Illinois, February 15, 1951.

2 In cooperation with the Wisconsin Conservation Department, the United States Department of Agriculture, the Atomic Energy Commission, and the Nekoosa-Edwards Paper Company.

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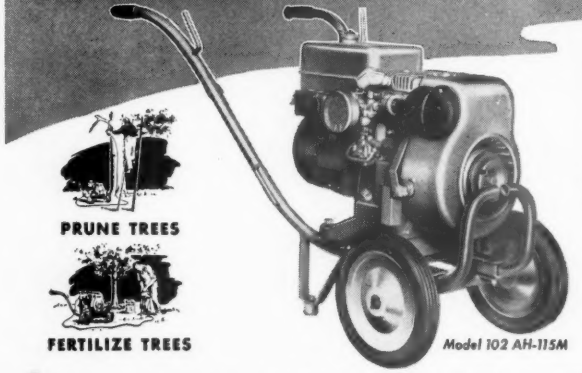

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MOVE TREES

Model 102 AH-115M

Cut costs, save time, do better work. Use electrical tools on every job beyond the reach of highline power. With electric hedge trimmers, grass clippers, saws, drills, hammers, spades, tampers and other electrical equipment, one man can do the work of several. *You can have electricity available anywhere* with Onan Portable Electric Plants. Mounted on dollies, Onan Electric Plants can be wheeled right to the job. Plenty of plug-in electric power is instantly available. Many lightweight A.C. and D.C. models— 400 to 5,000 watts.

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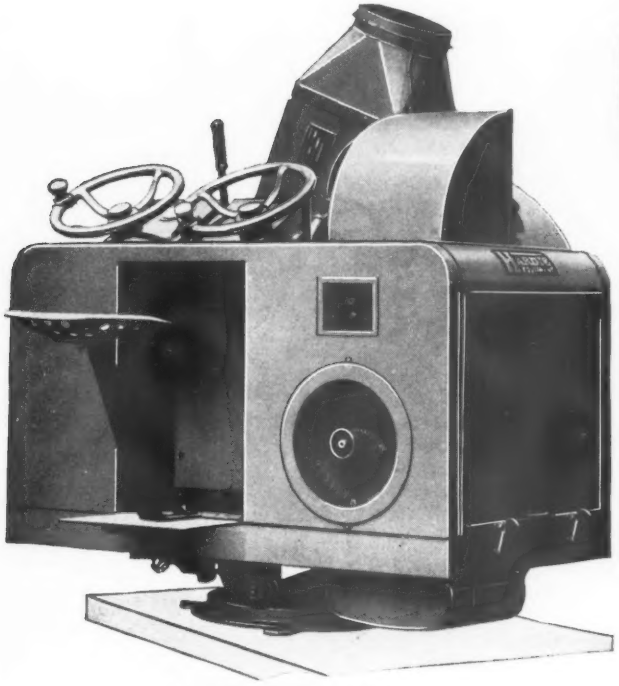
PLANT AMERICA-WISELY

The Concentrate Mist Shade Tree Sprayer You're Waiting For



Hardie Concentrate Mist Shade Tree Sprayer

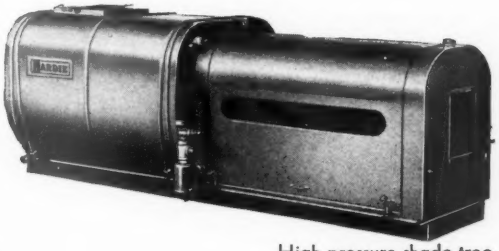
10,000 cu. ft. of air per minute at 135 miles per hour.

Complete atomization of the concentrate at 300 psi.

That means effective coverage of the largest and tallest trees.

200 Degrees rotation of fan housing. 360 Degrees rotation on turn table.

That means the ability to apply the concentrate mist spray in any direction and at any angle, instantly.



High pressure shade tree sprayers in standard and custom built models.

MANY outstanding features make the new Hardie concentrate mist sprayer the most advanced pest control equipment ever offered for shade and forest tree protection.

Write for complete specification data on this new Hardie unit, and the big Hardie high pressure shade tree sprayers that for years have made shade tree spraying from the ground, by long distance stream, easy and effective.

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PEST CONTROL EQUIPMENT

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BIG TREE MOVER

Handles up to 12-inch trees.

- ✓ "Rocks back" for easy loading and unloading.
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- ✓ Two sizes . . . fits any standard truck chassis.
- ✓ Superstructure removable for other truck use.

Proved in use for years by nurseries and park departments all over the United States.

Write for detailed specifications and prices. Sold on terms if desired.

Williams & Harvey Nurseries
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CONTROL

APHID
CANKERWORMS
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RED SPIDERS
RED MITES

with

MIST-BLO 26-R

MIST-BLO 26R is a concentrate readily diluted with water or oil to the percentages of DDT required for the specific operation and thus eliminates involved mixing procedures.

MIST-BLO 26-R contains:

- *DDT for Elm Bark Beetle*
- *WHITE OIL to prevent aphid populations buildup*
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Field use has proven the merits of the various toxicants used in this product, now they are combined in one concentrate.

Eliminate involved mixing—order one concetrate that combines the necessary chemicals for complete, successful tree spraying.

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NEW, complete line of PRUNING SAWS
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The last word in fast, easy-cutting pruning saws, newly designed, incorporating latest developments as well as long years of experience in the field. Blades—specially made to our specifications in Sweden of famous Swedish charcoal steel—are fitted to our own expertly designed, hard plywood handles. The finest line we have ever produced—or seen!

A saw for your every pruning requirement.

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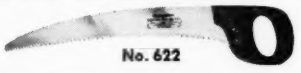
Two typical models: No. 826 for general, heavy work. No. 622, a "draw cut" for lighter work. Both very fast cutting. 6 patterns cover all needs, from chain saw to hand pruner.



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Seymour Smiths — The Last of Quality — SINCE 1850

Also: *Tree trimmers, pole saws, pruning shears, brush cutters. Write for circular and prices.*

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It's Lighter... It's Faster... It's Tougher

It's the NEW HOMELITE ONE MAN Chain Saw

It's a one-man saw that really does the work of a two-man saw.

Straight Blade sizes 18", 23", 30", 42". Bow saw sizes 19", 25". Comes complete with chrome-plated perma-sharp, narrow kerf chain; automatic clutch; automotive type carburetor; rainproof magneto; and controls that are easily and naturally worked by operator.

27 Pounds 4 Horsepower More Power Per Pound than any other saw

It's hard to believe, but it's absolutely true, the new Homelite Chain Saw is better than ever.

It's lighter in weight . . . only 27 pounds . . . and its pivot action and perfect balance . . . with most of its weight close to your body . . . makes it feel still lighter.

Moreover, it's faster . . . much faster. Its narrow kerf chain . . . driven by the powerful Homelite 4 hp engine . . . cuts through an 18 inch tree in as little as 16 seconds and brings down trees 48 inches and more in diameter.

Whether you're felling, bucking, undercutting or notching, the new Homelite Saw will give you greater output because of its easier handling, less fatigue on operator and greater power.

Built and backed by Homelite, manufacturers of more than 300,000 gasoline-engine-driven-units, it is built to *stand up* under rugged use. Send for new, complete bulletin.

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PERFORMANCE · DEPENDABILITY · SERVICE

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IT'S NEW!

IT'S DISSTON!

IT'S THE BEST IN LIGHT-WEIGHT SAWS!

Here is a new model of an old woods favorite—the tough, light-weight DO-101 Disston One-Man Chain Saw. It has a sturdier crankshaft, a reinforced rear handle, new rapid-action toggle stop-switch and many other advanced features for harder use and longer life. And, for smoother, faster cutting, the DO-101 is equipped with Disston's new fast-cutting "DF" chain. Running on a narrow profile slotted guide rail, this chain cuts a kerf that minimizes binding. Can be sharpened by hand on the rail in a matter of minutes.

Don't take our word that a Disston is just about the finest cutting tool that's ever come your way. Ask anyone who has ever handled a Disston. Then see your Disston Dealer. He'll let you try out one of these beauties for yourself. Once you feel that steady power safely under your command and effortlessly guide the chain through a cut, you won't rest until you own one of these time-saving money-makers yourself.

Don't forget, Disston also makes the powerful DH-120 12-hp Two-Man Extra Duty Chain Saw . . . a favorite the world over.

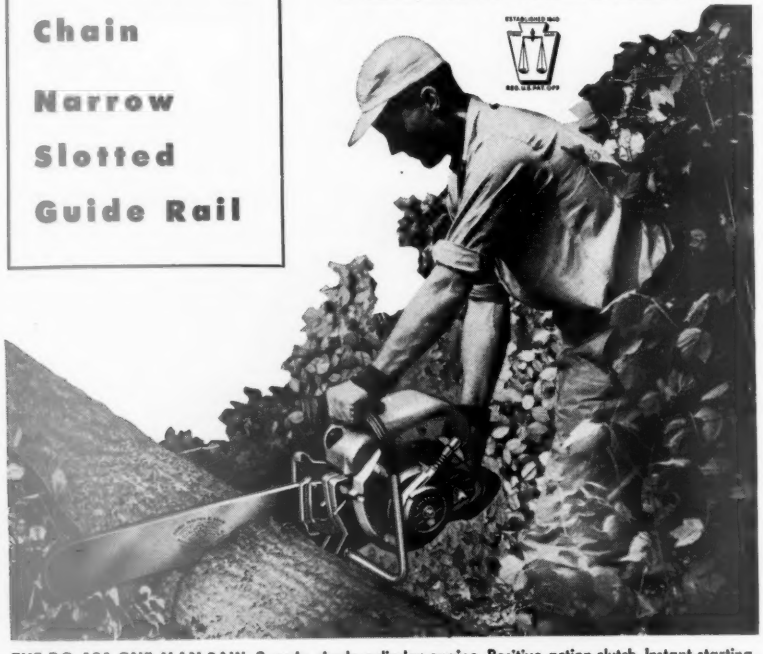
Featuring—
New, Fast-Cutting Chain
Narrow Slotted Guide Rail

FIGHT WASTE

A tip for present Disston Saw Owners . . .

Follow the simple FIGHT WASTE preventive maintenance instructions which are available to you free of charge. Send for the valuable check-up charts, the illustrated maintenance folder, the detailed handbooks. Above all, rely on the services of your Disston Dealer.

HENRY DISSTON & SONS, INC.
8 H TACONY, PHILADELPHIA 35, PA., U.S.A.
In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.



THE DO-101 ONE-MAN SAW. 2-cycle, single-cylinder engine. Positive action clutch. Instant-starting, self-rewinding Magnapull Starter. Automatic chain lubricator. Fast-cutting "DF" chain and slotted profile guide rail in 20", 26", 32", 36", 40" lengths. Also available are 18" and 24" rails with straddle type chain and 15" bow saw for speedy bucking and limbing. Helper handle available for two-man operation.

90 Trees

(Continued from Page 11)

London Plane—Platanus acerifolia pyramidalis
Globe Elm—Ulmus carpinifolia umbraculifera
Globe Linden—Tilia platyphyllos globosa
Globe Locust—Robinia p. umbrac

OTHER FORMS

Quercus serrata
Quercus shumardi
Quercus imbricaria
Quercus phellos
Quercus coccinea
Quercus borealis
Quercus alba
Acer saccharum
Acer platanoides
Acer platanoides Schwedler
Acer platanoides Crimson King
Acer buerguerianum
Acer rubrum (fall color selection)
Ulmus carpinifolia Buisman
Ulmus glabra camperdowni
Zelkova serrata
Sophora japonica
Maackia amurensis
Evodia hupehensis
Evodia danielli
Robinia pseudoacacia
Robinia pseudoacacia Idaho
Phellodendron amurense
Platanus acerifolia
Cercidiphyllum japonicum
Gleditsia tria, inermis
Gleditsia tria. Moraine
Crataegus oxyacantha Pauls Scarlet
Aesculus pavia
Aesculus carnea
Liquidambar styraciflua
Nyssa sylvatica
Tilia cordata
Tilia euchlora
Ailanthus altissima
Carpinus carolinianum

This fall we shall add to the list one of the finest, most beautiful all-around street trees that we know of, the Golden-rain (Koelreuteria paniculata). This tree never becomes too large, carries yellow flowers in June or July and thrives in any soil and under most severe atmospheric conditions. Others listed for fall planting are: the uprite form of Ginkgo biloba; Eucommia ulmoides, and Phellodendron lavallei.

Badly needed, as mentioned before, for the street tree job, and for the equally important small home planting job, is a wide complement of small foliage and flowering trees. In this small tree class we would list the following:

Acer Davidii
Acer Miyabei
Acer Nikoense
Acer griseum
Acer Forrestii
Acer rufinerve
Acer truncatum
Acer carpinifolium
Acer cappadocicum
Acer monspessulanum
Acer campestre
Acer ginnala
Acer spicatum
Acer capillipes
Acer colchicum rubrum
Acer platanoides reitenbachii

Acer platanoides Purple Heart (all season red)
**Acer platanoides Chas. F. Irish*
**Acer platanoides Cleveland*
**Acer platanoides Almira*
**Acer saccharum Alton Ogden*
**Acer rubrum Paul E. Tilford (globe)*
**Acer rubrum Bowhall (pyramid)*
**Acer rubrum Newt. Armstrong (fastigiate)*
Acer rubrum Schliesengeri
Tilia platyphyllos fastigiata
Tilia tomentosa
Tilia japonica
Tilia petiolaris
Pyrus calleryana
Pterocarya stenoptera
Crataegus phaenopyrum
Crataegus phaenopyrum fastigiata
Crataegus monogyna inermis (globe)
Crataegus monogyna stricta (upr.)
Euptelea polyandra
Gleditsia tria. elegantissima
Alnus cordata
Fraxinus ornus
Celtis japonica
Ostrya virginiana
Quercus montana
Quercus robur
Cladrastis lutea
Sassafras variifolium
Aesculus carnea briotti

A consideration of considerable importance is the size of tree to set out. Our experience involving 15,000 on over 140 miles of planting very definitely rules out, as impractical and an unnecessary expense, the time favored 2" caliper tree. Our records show the survival rate, and therefore the uniformity of the planting, of the ¾" to 1¼" tree beyond any question of doubt as the practical size for planting. Some say the people will not stand for the planting of trees smaller than 2". Where in the Constitution, or your city ordinance, does it say the people shall dictate the practical approach to any problem? You will have an occasional complaint naturally but an explanation, being common sense, of why you are using the smaller tree usually suffices. The survival is out of all proportion in favor of the inch tree, so is the cost—don't forget the cost if a taxpayer squawks. Incidentally, trees are going to cost more if you use these finer quality functional newer forms and species, however, even if the price is double your total outlay will still be even if you plant at the proper spacing of around 55 or 60 feet.

We know from our program in Cleveland that people like globe head trees. There has been really enthusiastic comment on our plantings of Globe Locust and Globe elm. We need a better selection of small globes. Street tree management has come of age and tools to do the job are badly needed for a really artistic effect. The streets of your city are its show windows and trees are the dressing.

We should have only the best in gay foliage, flower and functional forms of trees in our city show windows.

**A Cleveland Div. of Shade Trees Selection.*

GET FAST, THOROUGH COVERAGE of large areas with a John BEAN ROTOMIST!

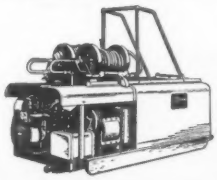
Better pest control for shade trees and parks because of Rotomist Controlled Performance

Rotomist will do a better job for you because it delivers atomized spray concentrate of the correct micron size, but at relatively low air velocities so there is no damage to trees. Rotomist accomplishes this by pre-atomization with a powerful auxiliary blower in a 240-mile-per-hour air stream. Then the controlled mist is delivered to the main air stream of lower velocity. With Rotomist you get maximum protection for the trees plus efficient use of spray material as the spray droplets get on the foliage but are not large enough to cause wasteful run-off.

Rotomist can apply dry dust, wet dust or concentrates and get thorough coverage over large area and into the tops of tall shade trees.

Easy, precise operation is made possible by Rotomist's hydraulic controls. Write for a free Rotomist folder for complete information.

• RANGER is your all-purpose sprayer



You'll find dozens of uses for a John Bean Ranger, an all-purpose municipal sprayer for weed, insect, brush and pest control. High-pressure hose on two drums makes it easy to spray in hard-to-get-at places.

John fmc BEAN
LANSING 4 MICHIGAN
DIVISION OF FOOD MACHINERY & CHEMICAL CORP.

JOHN BEAN
Department TM-8, Lansing 4, Michigan
Please send me information on
☐ ROTOMIST ☐ RANGER
Name_____
Address_____
City_____ State_____

Cincinnati

(Continued from Page 6)

scape Forester, Waterbury, Conn.
Others: William Luckner, Jr., Stepney, Conn.
Albert W. Meserve, Danbury, Conn.

10:45—The Elm Trees of Stratford, Connecticut—T. T. Janosko, Stratford, Conn.

11:15—Public Utility Arboricultural Responsibilities — George D. Blair, Forestry Consulting Services, Jackson, Michigan.

P. M.

1:30—Business Meeting. Open to all Members. President E. W. Higgins, Presiding
Roll call of Members of the Board of Governors.
Committee Reports:
Memorial Research Fund Committee
Dr. Curtis May, Division Forest Pathology, U. S. D. A., Beltsville, Maryland.
Slide Library Committee
R. K. Alman, Cedar Rapids, Ia.
Nomenclature and Standards Committee
Oscar F. Warner, Landscape Forester, Waterbury, Conn.
Shade Tree Evaluation Committee
Norman Armstrong, White Plains, N. Y.
Public Utility Arborists Committee
Karl Kuemmerling, Forester to Public Utilities, Canton, O.
Shade Tree Selection Committee
Edward H. Scanlon, Commissioner, Division of Shade Trees, Cleveland, Ohio.
Report of Convention Committees
Election of Officers
Selection of 1953 Convention City.
Old Business.
New Business.

3:00—How I Operate a Small Tree and Landscape Business—F. L. Parr, Parr and Hanson, Hicksville, N. Y.

3:45—Some Shade Tree Insect Pests in the Midwest and Their Control—Dr. R. B. Neiswander, Dept. of Entomology, Ohio Agricultural Experiment Station, Wooster, Ohio.

4:30—Plant Clinic
Discussion Leader: Dr. J. C. Carter, Illinois Natural History Survey, Urbana, Illinois.

EVENING

7:00—Annual Banquet, Entertainment and Dancing. Pavillon Caprice, 4th Floor.

FRIDAY, AUGUST 31

A. M.

Session Chairman, Noel B. Wysong, Vice President, National Shade Tree Conference.

9:30—Ramblings of a California Arborist —Roger F. Sohner, Sohner Tree Service, San Anselmo, California.

10:15—Small Trees—Jake Gerling, Dept. Parks, Rochester, New York.

11:15—Factors Involved in Injury by Mist Blower DDT Formulations—Dr. John G. Matthysse and Dan Clower, Dept. of Entomology, Cornell University, Ithaca, New York.

12:00—Adjournment.

P. M.

Inspection of Park and Street Tree Plantings in Cincinnati.
Notify Harry A. Gray, Board of Park Commissioners, 2005 Gilbert Avenue, Cincinnati, Ohio.

LADIES PROGRAM
NATIONAL SHADE TREE CONFERENCE CONVENTION
Ladies Headquarters—Parlor G, 4th Floor.
TUESDAY, AUGUST 28

A. M.

8:00—Registration, 4th Floor Foyer.

P. M.

12:15—Luncheon at Skyline Room of the Terrace Plaza Hotel.
Style Show staged by the H. & S. Pague Company, Cincinnati, Ohio
Afternoon free for shopping.

EVENING

6:30—Busses leave for Coney Island.
Dinner and Amusements—A good time for All.

WEDNESDAY, AUGUST 29

A. M.

10:00—Busses leave for visit to Cincinnati Zoological Gardens.

P. M.

12:15—Luncheon—Dairy Bar, Cincinnati Zoological Gardens.

1:30—Tour of Rockwood Pottery.

3:00—Tour of Krohn Conservatory.

THURSDAY, AUGUST 30

A. M.

10:00—Busses leave for Taft Museum.

1:00—Luncheon—Cincinnati Club, 30 West 8th Street.
Demonstration of Flower Arrangement by Allied Florists of Cincinnati.

EVENING

7:00—Annual Banquet. Entertainment and Dancing. Pavillon Caprice 4th Floor.

FRIDAY, AUGUST 31

A. M.

7:45—Leave for Ruth Lyon's Radio Program, Crosley Square Studios, 9th and Elm Streets.

Horticulture

(Continued from Page 16)

a potential Burbank here in this room today. You are on the first rung of the ladder. As you go farther up you will find many frontiers in the basic sciences still waiting for someone to explore. We still, for instance, do not have the answer to the greatest mystery of all, namely, what is the nature and character of the green chlorophyl in plants. All living matter depends on it. What makes it "tick"? If you can find the answer to that question you will have solved the age-old riddle of life itself. There are those who say it is beyond the ken of man. Nevertheless, our best-known amateur botanist, Charles Kettering, Director of Research for General Motors, who calls himself a "Monkey wrench scientist," is working on this problem. He does not agree with those who tell him the mystery cannot be solved by mortal man. Do you think so?

In conclusion I want to repeat an inscription which I saw recently on the garden gate of a friend of mine. It read as follows:

"The kiss of the sun for pardon
The song of the birds for mirth
One is nearer God's heart in a garden
Than anywhere else on earth."

(*Dorothy Frances Gurney*)

Governor Signs Ohio N. A. D. Bill

Governor Frank J. Lausche of Ohio on June 5th signed into law the bill making the Last Friday in April Arbor Day. Looking on are the legislators who sponsored the bill. (left) Kenneth W. Thornton, House; Senator Jos. R. Nutt, Jr., and Senator Elizabeth Gorman. This made Ohio the 11th state to adopt National Arbor Day.

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Authors and Books

The following books may be ordered from TREES Magazine, Box 5607, Cleveland, Ohio.

HOW TO LANDSCAPE YOUR GROUNDS, by Loyal R. Johnson. A. T. DeLa Mare Co., 448 W. 37th St., New York. 257 pgs. illus. $3.50.

In a class by itself among landscape gardening books by reason of its practical planting plans and keys thereto for all sections of the country—from Massachusetts to Florida and Louisiana, and from the Middle West to California. Prepared by eight well-known landscape architects, these plans are simple in form, and can be carried out at moderate cost with most effective results.

The small property owner who visions a garden setting for his home, and who by necessity must do that developing himself rather than hire a landscape architect, will find this book an excellent guide, leading him by easy stages from careful planning before planting to the locating of the house, the construction of walks and drives, the grading, construction and maintenance of lawns, the flower garden, the rock and wild garden, the selection of trees and shrubs and the architectural features of the garden.

One of the special features of the book are the Select Lists of Shrubs, Acid Soil Plants, Trees and Vines as prepared by Alfred Carl Hottes.

* * * *

THE CHEMISTRY AND ACTION OF INSECTICIDES, by Harold H. Shepard. McGraw-Hill Book Co., New York. 504 pgs. illus. $7.00.

This reference-text is about insecticides, their chemical and physical properties, and their effects upon insects, plants, and higher animal life, including man.

Instead of subdividing insecticides on the basis of the manner in which the insect is exposed, this book follows the more logical procedure of arranging the materials according to their chemical relationships.

Particularly noteworthy in this new treatment are the two chapters relating to organic compounds, which are largely new as insecticides within the last ten or fifteen years. A serious effort has been made to include new insecticides up to the time of the manuscript's completion without, however, overemphasizing recent discoveries which may not have lasting importance.

Treatment of the subject is as simple and as self-explanatory as possible for the sake of the less experienced in these fields, whether in the classroom or in some aspect of the practice of applied entomology. At the same time it is sufficiently theoretical to supply background for the various directions taken by insecticide research.

This book is an absolute necessity on the bookshelf of the Arborist, Nurseryman, City Arborist and Park man.

ROCKY MOUNTAIN HORTICULTURE IS DIFFERENT, by George W. Kelly. The Green Thumb Council, 1355 Bannock St., Denver, Colo. 160 pgs. illus.

Literature on the flora and gardening in the Rocky Mountain section of the United States is not too plentiful so this little book should be of considerable value to the home owner of that region. The plant lists of trees, shrubs and hedge material should be very useful. It is a handy reference book for the home gardener.

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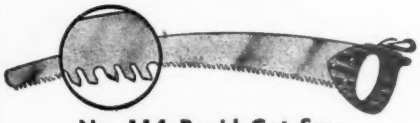

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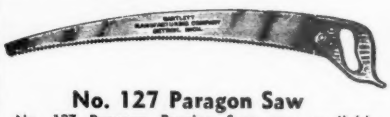

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